

Distribution of Military Power, Demobilization, and
Prospects of Post-Conflict Peace

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Many civil wars do not end with a decisive victory and the complete disarmament of a warring party but with all conflict parties retaining some level of military capacity. While the distribution of military capabilities might influence how armed conflicts are terminated, the relative strength of the conflict parties is also likely to impact the post-conflict order and related power-sharing arrangements in peace agreements as well as the stability of the post-conflict peace. We will draw on data that provides information about the military capabilities at the time that war ends but also for the aftermath of the conflict. Thus, we will be able to evaluate whether non-state armed groups that keep separate armed pose a greater danger to a recurrence of violence as opposed to demobilization or military power-sharing.

Keywords: military capabilities, post-conflict stability, civil war recurrence

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Introduction

The balance of power does not only explain the dynamics or the outcome of a war but can also have a significant impact on the post-conflict order. While not undisputed, there is an emerging consensus that peace after a civil war lasts longer if one of the conflict parties was able to defeat its opponent decisively. A clear and decisive victory means that one conflict party had overwhelming fighting power and was able to defeat the enemy to an extent that it no longer has the military capacity to challenge its opponent. Civil wars that end in a military stalemate, on the other hand, are more difficult to resolve. In cases when the power between the belligerents is more equally balanced, solutions have to be found for the conflict parties to stop combat activities and instead resolve the incompatibilities at stake in a peaceful manner. Peace negotiations and agreements can help to overcome information asymmetries and, maybe more important at that stage, commitment problems. While peace negotiations need to provide both parties with security, the future of the combatants is a decisive factor in the puzzle to establish stability after conflict.

Demobilization can be more or less challenging depending on a number of factors related to the size of the rebel forces and its relative strength at the end of the war. A rebel group that is decisively defeated by government forces will not count large numbers anymore. Battle losses contribute to a decimation of rebel fighters. In addition, rebel groups that are militarily under strong pressure will be less and less able to provide their followers with incentives to continue the rebellion. Instead desertion will become more attractive to the individual if the personal costs increase (Gates 2002) but also if mistrust within the military units rise (McLauchlin 2015). Defeated, or rather very weak rebel groups will have increasingly difficulties in upholding a fight, at the same time there will be fewer combatants that have to be demobilized after the war ended. If, on the other hand, the rebel group still is sufficiently numerous to continue a war, the task of demobilization or military integration poses a greater challenge. Large numbers of ex-combatants will have to move to a civilian life and need to be offered alternative sources of income. Besides, the leaders of the rebel group will want to keep their strength to maintain their bargaining leverage and might require security guarantees and compensation.

Our study will contribute to the body of literature that investigates the distribution of military power. It seeks to explain why some civil wars recurs and not others given the military means conflict parties have at their disposal at the end of the war as well as during

the post-conflict era. Further, it will shed light on how important demobilization of both, rebel and government forces, is for a society's transition to a sustainable and peaceful order.

Military balance and the prospects of peace

As one of the most influential theories the bargaining model holds that fighting is costly and thus warring parties are better served by agreeing to a bargain *ex ante*, essentially avoiding costly fighting (Fearon 1995; Powell 2002; Reiter 2003). The failure to find a bargaining solution can help to explain civil wars at all stages, the outbreak, duration as well as recurrence of armed conflict (Walter 2009). The commitment problem and information asymmetries are major obstacles as to why warring parties find it extremely hard to successfully settle armed conflict and establish a stable post-conflict order (Fearon 1995; Walter 1997).

Conflict parties prefer a negotiated settlement to a costly war under the assumption of complete information (Fearon 1995). However, they typically have incentives to keep information about their military capabilities private and misrepresent them during different conflict stages. Before a civil war breaks out often little is known about the size and strength of rebel groups, in particular whether they possess sufficient and reliable financial support to uphold a war against the government. This information becomes available in the course of the conflict when combat activities actually take place and display the relative power of the conflict parties. The government, on the other hand, also has private information, but more so about its resolve to fight an opposition group or to make concessions (Walter 2009).

As the conflict continues more information about the relative strength of the belligerent becomes available. Longer wars often end in a military stalemate (Fearon 2004). Thus, already the duration of an armed conflict itself reveals information about the relative power distribution as the conflict parties increasingly receive information about each other's strength and weaknesses (Shirkey forthcoming). However, uncertainty about the capabilities and the resolve might prevail even in the later stages and will be an impediment to the peace process.

Civil wars typically end either in a decisive military victory for one of the conflict parties, are terminate by a peace agreement, ceasefire or under unclear circumstances (Kreutz 2010). Between 1990 and 2005 roughly one fifth of all armed conflicts resulted in a peace agreement or ceasefire. About half of the intrastate conflicts ended under unclear circumstances and about 14% saw a decisive victory by one conflict party. The question of

whether peace is more stable after a military victory or a peace agreement is subject to intense debate (Licklider 1995; Mason et al. 2011; Toft 2010).

Wagner (1993) provides an explanation of why civil wars are less likely to recur after military victory. In a nutshell his argument is that a decisive victory on the battlefield severely damages the enemies' organisational structures and collective goal. By contrast, in case of a military stalemate both still have sufficient fighting capacity to continue the armed dispute. After negotiated settlements the warring parties are forced to find a political solution and disband their military capacities to stop further violence. One major obstacle is that they must live side by side in a state that has been shaped by previous fighting and atrocities (Licklider 1995). Hence, Wagner (1993) and Licklider (1995) expect civil wars to recur less frequently after military victories than negotiated settlements. Furthermore, military victories comprehensively reveal private information about the opponent reducing information asymmetries and uncertainties.

Empirical studies to a large extent support this line of reasoning; peace seems more stable after a military victory than after negotiated settlements (Mason et al. 2011; Toft 2009, 2010). However, distinguishing between government and rebel victories the evidence is less clear. While underlying incompatibilities and original grievances might not be solved if the incumbent remains in power (Mason et al. 2011), a victorious rebel movement might encourage other groups to pick up arms (Kreutz 2010) or bolster their legitimacy and allow for democratic reforms, therefore increasing the prospects of peace (Toft 2009).

Although a military stalemate suggests that high information asymmetries are still present, the initiation of negotiations might help to reveal information. Uncertainty might lead conflict parties to negotiations earlier during the civil war, whereas the conflict parties might be reluctant to settle conflict if information asymmetries about military capabilities prevail as is the case for a military stalemate. In civil wars with multiple actors information problems can be more severe (Cunningham 2006; Findley 2012). Along similar lines, the information problem is enhanced if there is fragmentation of armed groups. Fragmentation might not necessarily lengthen a conflict and can even help to end hostilities as it weakens the group but it might also shorten the post-conflict peace. Splintering groups are groups with new interests that might prefer to continue the fight but in any case introduce more uncertainty (Rudloff and Findley 2016). Such conflict actors are widely regarded as spoilers, key conflict actors who may reap the benefits of further violence. Pearlman's (2009) comparative analysis of the peace processes in the Middle East shows that the heterogeneity of the Palestine Liberation

Organization resulted in the failure of the peace processes. While the Fatah claimed to represent Palestinian people, more radical factions used terroristic attacks to spoil peace.

During the negotiation process conflict parties have incentives to misrepresent information. In particular, rebel factions will attempt to keep information about their military capabilities private in order not to provide the government with too much knowledge that can be used against them in case the government reneges on the deal in later stages. Another reason is that insurgents might try to appear more powerful than they actually are in negotiations, in order to reach a favourable deal (Walter 1999). Such patterns of misrepresentation are more likely to persist after negotiated settlements than military victories because it is less obvious which side has the advantage on the battlefield. In addition, political developments that occur after fighting ceased can affect the beliefs about both sides' military capabilities. New leaders might enter the scene, external or economic shocks can disturb the post-conflict environment or new alliances with internal and external actors may be formed. Based on these previous arguments and findings we will reassess the following hypothesis.

H1: The post-conflict peace is more likely to endure following decisive military victories.

A second major obstacle for finding a bargaining solution is the commitment problem. The core argument of the commitment problem is that incentives to renege on a peace agreement leave conflict parties in a vulnerable situation (Fearon 1995; Walter 2002, 2009). If neither conflict party was able to secure a military victory but instead ended up in a stalemate they find themselves in a state of domestic anarchy (Walter 1997). In this situation both camps have established separate "dual" security apparatuses where no central authority ensures public order through police, security or judicial services. Nevertheless, cooperation is indispensable because the provision of security for citizens requires the resolution of anarchy and the dissolution of dual sovereignty (Quinn, Mason, and Gurses 2007).

After conflict actors have agreed to cease fighting they enter the highly critical stage of demobilisation and disarmament when cooperation is essential but the risk of mutual exploitation remains high. Vulnerability arises from the fact that both sides need to undertake demobilization while knowing that for them as well as for the enemy defection might promise greater benefits. Defection and the unilateral return to armed violence protect the aggressor from defeat whilst promising a higher likelihood of military success if confronted with an opponent that is willing to cooperate.

For the conflict parties to reach a negotiated solution, they both must credibly commit that they will adhere to the agreement and will not renege on the promises. After negotiated settlements the conflict parties are left to enforce the terms of agreements which can be challenging, especially during instable times of transition and given the lack of enforcement mechanisms. In particular, the factor time poses an inconsistency problem. Even if actors prefer a settlement in the current situation, in the future it might be beneficial to renege if the power distribution changes. Despite of costly signals that were sent out after a conflict ended, the credibility of a commitment might be undermined if the power distribution shifts after the war. According to Walter (2009), after a negotiated settlement there is typically a transfer of resources to the government away from rebels. If power shifts, for example because of rebel demobilization, the stronger side will gain bargaining power and might decide to renege on its earlier promises. This fear of exploitation can prevent the conflict parties from reaching an agreement in the first place. The adversaries need to convince each other that they will not take advantage of the other in the future (e.g. Collier and Hoeffler 2006, Glassmyer and Sambanis 2008, Svensson 2007, Walter 2009). It is thus paramount for the conflict parties to send out signals that they are serious about peaceful relations. The government side has presumably a larger credibility problem (Svensson 2007). Whether agreements are successfully implemented depends to a large part on the government's capacity to ensure implementation. Implementation will be more successful in states with high capacity and with a government that is able to extract resources (DeRouen et al. 2010). Walter (2015) emphasizes that strong political institutions might also strengthen peace because more accountable governments face institutional constraints that are more likely to commit to the implementation of reforms.

A successful implementation of peace agreements can be enhanced if third parties monitor agreements and provide security guarantees. The engagement of third parties increases confidence in the peace process and helps to monitor demobilization (Glassmyer and Sambanis 2008, Walter 2002, Mattes and Savun 2010, Hartzell and Hoddie 2003). Another ways of overcoming commitment problems is by means of power-sharing provisions in the peace agreement (Walter 2002). Power-sharing agreements are incorporated in most peace agreements since the end of the Cold War.¹ Whether a government is willing to share

¹ Whether power-sharing has the potential to ensure lasting peace is also related to how costly the signal that is sent through power-sharing. In general, they can signal credibility by imposing costs on both sides when implementing the peace agreement and incrementally reducing fear among former adversaries. Signals are referred to as credible if they induce costs to which the sender would not be willing to accede if the obligation were actually not carried out (Fearon 1997, 69; see also Hartzell and Hoddie 2007, 92).

power with rebels depends, among other factors, on the balance of military capabilities. By consenting to share power the incumbent government dedicates authority and capability to its adversary, thereby losing political resources. The stronger the rebel group, the higher the chances for power-sharing as continued fighting would be too costly for the government. In many cases the government might be the stronger party but is unable to defeat the weaker rebel group. Whereas for rebel groups it is already a partial success to simply maintain the fight, for the government side an ongoing and long-lasting conflict is a sign of weakness if it cannot provide security and keep the monopoly on the use of force (Gent 2011). However, the extent of power-sharing might not be a direct reflection of the relative power distribution. The stronger conflict party might be willing to over-compensate the weaker party to meet concerns of insecurity at the bargaining table (Park 2015).

While early studies conclude that power-sharing institutions reinforce each other in bringing peace (Hartzell and Hoddie 2007; Hoddie and Hartzell 2005), this effect is credited to either political (Mattes and Savun 2009; Mukherjee 2006), military (DeRouen, Lea, and Wallensteen 2009; Jarstad and Nilsson 2008) or territorial power-sharing provisions (Hartzell and Hoddie 2007; Walter 2002). A major shortcoming of several previous studies is that they do not take the implementation of power-sharing institutions sufficiently into account (Hartzell and Hoddie 2007). As Jarstad and Nilsson (2008) show, only one third of all military power-sharing divisions were actually fully implemented (see also Joshi et al. 2015).

Following the conclusion of a peace agreement conflict parties enter the stage of implementation, which is an extremely difficult and risky process for both, rebels and governments. Once rebel groups have agreed to lay down arms, the signal becomes more costly as time passes and the rebels' bargaining power diminishes. At the same time the risk of mutual defection remains high and both sides go through multiple stages of vulnerability when demobilising their forces (Walter 1997, 1999). The longer peace endures, the more the military capabilities of the rebels decay. In addition, once fighting stopped the extraction of financial resources from illicit activities becomes increasingly difficult, such as from looting or the exploitation of natural resources (Collier and Hoeffler 2006).

Demobilization of non-state armed groups is a major precondition to return to a state where the official government has the monopoly on the use of force. However, rebel leader but also rank and file fighters might be reluctant to lay down their arms if their safety is not guaranteed. For a peace process to last it is essential that former combatants turn in their firearms but to do so they need to be provided with an alternative source of income and employment in order not to be available anymore as recruits to new (or old) rebel groups or

criminal bands. Thus, demobilization has to overcome security-related as well as economic obstacles (Glassmyer and Sambanis 2008).

To overcome the dilemmas and dangers of dual security apparatuses, rebel organizations are required to eventually disband their forces in total, latest in the implementation phase. The process of demobilization can occur at a different rate and to a different extent. Thus, the signal that rebel groups send by demobilizing can show different levels of commitment. They might retain some combat capacity in the first stages of the peace process in order to avoid exploitation by the government, in particular if they do not feel too secure and in order to keep some bargaining leverage. If the rebels fear that the government might renege, they have an interest in keeping separate forces at their disposal (Mattes and Savun 2009).

In contrast, government forces will have to demobilize their troops to some extent only which appears to be less costly but also bears risks. With the threat of a civil war being gone, high military spending and a large army are no longer justified, especially in light of budgetary constraints. Downsizing the government troops does include major challenges, such as offering compensation for the military personnel that needs to find new ways of employment in civilian life. The partial demobilization of the national army can be even more problematic if peace agreement provisions ask for the integration of rebel fighters. The integration of rebel forces in the national army can function as a costly signal and mechanism to deter the government to renege on its promises because it increases the costs of mutual defection. However, it can also increase competition within the military and thus create instability (Glassmyer and Sambanis 2008).

Military-power sharing is one way of structuring a demobilization process. An integration of rebels in the national army can help to reduce the rebel's insecurity by providing them with insights and control over the state's military apparatus. This strategy of rebel-military integration can send out a strong signal of commitment to the peace process especially if implementation is far-reaching (Glassmyer and Sambanis 2008). An agreement of military power-sharing that entails the integration of a proportion of combatants in the regular national or in a newly established army, and possibly includes senior posts in the armed forces for the rebel leaders can be such a signal (Hartzell and Hoddie 2007, Walter 2002). The integration of rebel forces in the national army can function as a mechanism to deter the government to renege on its promises because it increases the costs of mutual defection. By allowing former adversaries into the regular armed forces the government is willing to take the risk that the coherence of the military might be undermined. It signals

willingness of transparency, by providing former rebel combatants with access to military equipment and also intelligence. Military power-sharing arrangements are also a reflection that the government accepts its former adversary as a legitimate force. Governments are often reluctant to become involved with rebel groups in peace talks in order not to provide them with legitimacy (Clayton 2013). Admitting them in the regular government forces takes the recognition as legitimate political player one step further.

Whether the military integration of the conflict parties is of a symbolic nature or whether it encompasses substantial proportions is crucial in this context and is a reflection of the conflict parties' level of commitment. Related to this is the question of whether integration concerns mostly the rank and file soldiers and/or higher ranking officers. Respective provisions in peace agreements can be rather vague, whereas others include specific provisions detailing the number of rebels to be integrated (Ranft 2015). Integration can go deep merging and mixing combat units or the rebels are transferred unit by unit so that the previous combat units remain operative (Glassmyer and Samabanis 2008). Although formally military-power sharing might be present, the conflict parties might keep their forces separate and remain operative, and in case of defection could quickly take up arms again. Thus, we expect the signal of rebel demobilization to be much weaker if they retain separate forces.

While demobilization is only a limited option for government forces, a reduction of troops can assure the opponent about the government's resolve to uphold peace. Governments that shift their spending patterns away from the military budget will send out a strong and costly signal about their commitment to peace. By reducing military spending, the government signals to the opposition and possibly to external donors that it will adhere by the agreement. High military spending, on the other hand, might not only be a signal that the government intends to renege and will rather follow a powerful military lobby, but might also be related to initially higher costs related to the demobilization process. If peace negotiations incorporate a military integration of rebel fighters, military personnel might at first rise after the war ended. In any case, the rebels will screen various signals of government intentions and lower military spending will be a sign of a government that is set for peace (Collier and Hoeffler 2006).

H2: Post-conflict peace is more likely to endure when rebel groups send out a strong signal and demobilize armed forces.

H3: Post-conflict peace is more likely to endure when governments send out a signal and reduce military spending.

Research design

The main objective of the statistical analysis is to explore to what extent post-conflict countries that experienced a civil war are likely to experience another one given certain values of a set of independent variables. Our analyses focus on developments in the aftermath of a conflict. Our unit of observation is the rebel-government dyad in post-conflict years. We included all major armed conflicts with at least 1,000 casualties over the entire conflict that terminated between 1990 and 2009 according to the UCDP Conflict Termination Dataset v.2010-1, 1946-2009 (Kreutz 2010). Overall the data contains 48 post-conflict episodes in 33 countries of which 16 experienced the recurrence of armed violence of warring factions until 2012 when our analysis ends.

We rely on survival analysis to account for the time until an event, in our case the recurrence of conflict. It has the advantage that it can handle censored data. To get consistent estimation results the choice of a model depends on how the baseline hazard function may vary over time (Blossfeld, Rohwer, and Golsch 2007). Although parametric models are more flexible, we follow Box-Steffensmeier and Jones (2004) who suggest using the semi-parametric Cox proportional hazard model. The benefit of its application is that no assumption about the hazard rate has to be made and the form for the effect of covariates on the hazard is parametric.² The model estimates the likelihood that peace will end in a given year provided it survived until then.

The risk of civil war recurrence indicates whether civil war broke out again in a given post-conflict year based on the UCDP/PRIO Armed Conflict Dataset v.4-2015 (Gleditsch et al. 2002). In most of our tests we limit our analysis to the recurrence of conflict between the same conflict parties, thus the binary variable indicates whether civil war between the same conflict parties within a country recurred or not. In robustness tests we also assess whether

² We conducted various tests to find out whether the proportional hazard assumption holds. First, the non-parametric Kaplan-Meier estimates for each predictor were calculated and plotted. In a second step, a variety of equality tests, namely the logrank, Tarone-Ware, Peto-Peto and Wilcoxon (Breslow), tests for equality of survivor functions were calculated. Finally, Schoenfeld residuals for each variable and the overall model were estimated and plotted. Furthermore, we tested for multicollinearity and the overall fit of the posited models by calculating Cox-Snell and martingale residuals (Box-Steffensmeier and Jones 2004, 120). Given the results of all tests it is reasonable to assume that the proportional hazard assumption does not hold for the GDP per capita. In order to correct for non-proportional hazards Box-Steffensmeier and Jones (2004) advise to specify the respective variable with the interaction of $\ln(\text{time})$.

any conflict, i.e. also including conflict parties other than the original belligerents, breaks out again in the country. A variable counts the time since the armed violence ceased between the parties. This variable measures the overall peace duration of each case ranging from a minimum of 1 to a maximum of 23 in Nicaragua with an average peace of 8.1 years across all cases.

For our explanatory variables we rely on two different data sets. A new data collection at the Peace Research Institute in Frankfurt (PRIF) on post-civil war power and compromise (Gromes 2014, Gromes and Ranft 2016) provides a variety of variables on the military balance during, at the end, and after a civil war. With regard to the inclusion of cases, the PRIF data draws and thus overlaps with the UCDP data collections but goes beyond that in consulting country experts for verifying the choice of cases and the respective coding. While the country experts mostly agree with UCDP data, they do sometimes reach different conclusions, thus the data is provided in two variants. We will rely mostly on the UCDP coding but will conduct robustness tests with the data when the country experts reach different conclusions with regard to conflict duration and type of endings.

Our first hypothesis predicts that civil wars are less likely to recur after a decisive military victory. Studies exploring the determinants of civil war recurrence emphasize the outcome of the previous civil war (Kreutz 2010; Licklider 1995; Toft 2009; Wagner 1993). Internal armed conflicts can either end in a government or rebel victory, a peace agreement, ceasefire agreement or can become inactive (Kreutz 2010). Generally, these outcomes are believed to create different conditions for the prospects of peace with military victories having the best record, particularly when rebel organisations decisively beat the government (Toft 2009, 2010). To assess whether one side decisively won the armed conflict we rely on data from the UCDP Conflict Termination Dataset v.2010-1 (Kreutz 2010). We distinguished between civil wars that were terminated by peace agreement and military victories by either rebels or governments.

In many civil wars one side, often the government side, might be significantly stronger but still unable to decisively win the war. The rebel's relative fighting capacity might capture the power distribution among the conflict parties.³ However, we will rely on a dummy variable available in the PRIF data that indicates whether one or both sides are able to continue the fight in more than a sporadic manner. In addition to the type of conflict termination and continued fighting capacity, we assess whether the leader of the rebel

³ Data is available from Cunningham et al.'s NSA data but the data does not capture the dynamic aspects too well. We are interested in the relative fighting capacity at the end of the war.

organisation was captured and decimated in the last weeks of the conflict. This variable can also be interpreted as an indication of major weakness on the side of the rebels. We would expect the high command of an armed organization to be strongly protected and kept in safety as long as possible. Only if the armed group is under severe attack and if the enemy come dangerously close, will an assassination or capture be possible. The dummy variable takes the value of 1 if rebel organisations lost their leader by military or armed action of the opponent's side (e.g.: UNITA 2002, LTTE 2009), 0 otherwise. We rely on the PRIF data which did not consider instances where third parties toppled the respective leader or cases of death that were caused by natural circumstances. Instead, the data specifically coded whether one side was able to capture the opponent's political leader in the last phase of the conflict.

Rebels can send a strong and costly signal of their commitment to the peace process if they agree to disarm and demobilize their combatants. Demobilization can take different forms. Armed groups can demobilize fully and have their combatants step entirely into civilian life or can be integrated in the government forces. Sharing military power can be a signal on behalf of both conflict parties. On the other hand, if the conflict parties hold back and instead retain all or some of their fighting power, the signal is weak and rather a sign of distrust and lacking confidence. Based on the PRIF data we include two variables. A dummy variable take the value of 1 if both parties participate substantially (i.e. with at least 3,000 persons or 20 %) in the state military or police forces. A second variable controls for whether the conflict parties have kept separate armed forces at their disposal. For the government forces this means that less than 1,500 soldiers from the opponent participate and the rebels keep a distinct force.

Following Collier and Hoeffler's (2006) argument, in order to assess whether the government sends a costly signal we include variables that measure the annual growth rate of military expenditures as well as the growth of military personnel with data from SIPRI as available in the World Development Indicators (add cite). While declining military expenditure can be a signal of de-escalation of government troops, a reduction in personnel might more directly capture demobilization.

We will also conduct tests on the influence of the provisions and the implementation of disarmament and demobilization more directly with data from the Peace Accords Matrix Implementation Dataset (Joshi et al 2015). The dataset is limited to conflicts that end with a peace agreement, provides though for these cases encompassing information on a variety of provisions as well as their level of implementation. While it covers provisions that relate to a wide spectrum of reforms (e.g. various institutional and legal reforms), we will concentrate on

reforms related to the security sector, in particular the provisions that refer to demobilization and disarmament. The data provides information on whether a respective provision is included in the peace agreement, whether the measure was initiated but also on an ordinal scale the level of implementation.

We included a number of variables that have been identified in previous studies to explain the recurrence of civil wars (Fortna 2008; Mason et al. 2011; Quinn, Mason, and Gurses 2007, Toft 2010). Studies typically control for socio-economic factors emphasizing the importance of opportunity costs for rebellion (Collier, Hoeffler, and Rohner 2009; Collier, Hoeffler, and Söderbom 2008). We use GDP per capita based on purchasing power parity (2011 dollar prices) by the World International Comparison Program Data Portal (2015). As others we control for the fatalities and duration of the previous civil war to capture conflict intensity and costs (Mason et al. 2011; Mattes and Savun 2009; Nilsson 2008). For the empirical analysis the natural logarithm of fatalities reported by experts in case studies and the overall duration of the previous fighting is used.

Previous studies indicate that civil wars with ethnic issues are more likely to see a renewed outbreak. This line of reasoning follows the notion that in some societies ethnicity persists as a social cleavage, whereas in civil wars with groups fighting over ideological differences the conflict parties are more amenable to solve disagreements (Hartzell and Hoddie 2007; Nilsson, Svensson, and Sundberg 2006). As a measurement for whether a civil war was fought over ethnic issues, a binary variable was created. Based on the data by Cederman, Min and Wimmer (2010) 1 was coded in cases of ethnic wars, 0 otherwise.

In tests of robustness we include in our model an indicator of political openness. Scholars argue that in more democratic societies it is easier for citizens to voice their discontent through functioning political institutions making it difficult for rebel organisations to recruit combatants (Walter 2004). We rely on the democracy index by Teorell et al. (2013) that combines the composite Polity index of the Polity IV dataset (Marshall, Gurr, and Jaggers 2012) with the political freedom and civil liberties indexes of Freedom House project ranging from 0 (least democratic) to 10 (most democratic).

Empirical analysis

The results of the control variables largely follow our expectations and support previous studies. The risk that peace will fail is smaller in economically more developed countries, whereas conflicts that are related to ethnic issues are more likely to break out again. Conflict

intensity is also related to a higher risk of peace failure, whereas conflict duration is not significantly related to the survival of peace in most of our tests.

In our first set of tests, we focus on the distribution of power at the time when the war ends. Our results on the type of conflict outcome confirm previous findings (Mason et al. 2011, Toft 2009). Armed conflicts that end in a decisive victory are less likely to break out again ($p < .12$). Our analyses also confirm that conflicts that are terminated by a peace agreement are less likely to experience a renewed outbreak as well, a statistically significant result. We tested hypothesis 1 also with the alternative coding for the type of war ending. The PRIF data that is based on an assessment of country experts sometimes reach different conclusions on whether a war ended in a decisive victory (add examples). Tests with this version of the data confirms the general finding that a victory provides for a longer lasting peace and the variable is highly significant, regardless of whether we control for victory in general or differentiate by whether the government forces or the rebel groups carry a decisive victory. In further tests in column 2, we also find as expected that peace is more likely to fail if both conflict parties have continuing fighting power. The hazard ratio is highly significant. Sustainable peace is more difficult if sufficient military capabilities are still available to both conflict parties to continue the war in more than just a sporadic manner. Thus our tests so far confirm hypothesis 1 that peace is more stable if one party is significantly stronger and able to defeat the other. Furthermore, we looked at whether a captured rebel leader, as an indication of weakness, is related to a more stable peace. The variable turns out to be not significant.

In Model 4 and 5 of Table 1 we assess the distribution of military capabilities in the aftermath of conflict termination. A substantial participation of both conflict parties in the national military is not related to a more stable peace; instead the hazard ratio indicates that the risk of peace failure rises, although the result is not statistically significant. This finding does not confirm previous results on the peace-enhancing effect of military-power sharing (add cite) but is in line with Glassmyer and Sambanis (2008) who also find that military integration might even destabilize especially if poorly structured and incompletely implemented. A rather clear relation emerges with the indicator variable for whether both conflict parties keep their separate forces. The hazard ratio is very high and the result is highly significant. Graph 1 illustrates the survival function where we see that the probability of a peace survival drops quickly and substantively if the conflict parties hold on to their separate forces. Thus, if the conflict parties decide on retaining their fighting power, instead of complete integration into the official military forces or demobilization, the risk of a renewed

outbreak is much higher. We will assess the role of demobilization further in the next set of tests.

Not just rebel groups can send out a signal by demobilizing, the government side can also signal its commitment to peace by reducing the size of its military. In Table 2 we added measures of the annual growth rates of military expenditures and military personnel. The findings are in line with our expectations. Both are positively related to a higher conflict risk. In Graph 3 we illustrate the survival function for the growth of military personnel at the 10th, 50th and 90th percentile. We see here that a negative growth rate, i.e. a demobilization of military personnel, or very small positive growth rates are associated with quite high probabilities of peace survival, whereas in case of high military growth peace has not much of a chance to last. In the last column we assessed whether the growth of military personnel has different effects depending on the war outcome by adding an interactive term. In case of military victories the likelihood of another civil war drops by 89%. For a one per cent increase in the growth of armed forces the probability of another civil war increases about ninefold. With reference to the interaction effect, we find that in case of a military victory a growth in armed forces reduces the chances of another civil by 93% in case of a military victory. Further tests are necessary to help us to disentangle the context in which demobilization takes place.

A word of caution is warranted as we did not deal with selection effects yet. The failure to reduce the number of military personnel or the delay of demobilization might be more a symptom rather than a cause of a fragile peace (Glasmyer and Sambanis 2008). We will have to investigate why the military continued to grow after a civil war ended, in particular whether the DDR processes are a reason or whether a threatening environment (e.g. because of multiple actors involved, spoilers, or additional conflicts taking place) keeps the government from reducing its military capacity.

In further tests, based on the Peace Accords Matrix data (Joshi et al. 2015), we evaluate whether the provision, initiation, and implementation of disarmament and demobilization measures helps to keep a country at peace after a war. We rely, for now, on Joshi et al's baseline model in Table 3. The results quite clearly show that the inclusion of DDR provisions in peace agreements is not a sufficiently strong signal, neither is the initiation of demobilization measures. Instead, the results in column 5 and 6 show that the implementation of disarmament as well as demobilization reduce the risk of renewed conflict outbreak.

Conclusion

The recurrence of civil wars depends partly on how the war ended and how well conflict parties could demobilize their forces. In this paper we reassessed the distribution of military power at the time a civil war ends and its consequences for the duration of peace. Our results support previous findings that peace is more stable after a decisive victory and much less likely to last if military capacity is more balanced, or at least if both parties have enough capacity to continue fighting. Not just military victory but also a peace agreement makes the failure of peace less likely. These findings strongly support what others have concluded before, that conflict that end for unclear reasons or simply level out are more likely to re-emerge. Information asymmetries persist in such cases, whereas decisive victories but also peace negotiations can help to make information available about the power distribution.

The power distribution also influences how well commitment problems can be overcome. In the aftermath of a civil war, the remaining rebel fighters but also parts of an oversized national military need to demobilize. This process of demobilization leaves the conflict parties in a potentially vulnerable situation. While demobilizing can send a costly signal of commitment to the peace process, it also bears the danger that one party defects and reneges on its promises. Thus, rebel groups might decide to retain their fighting power to keep bargaining leverage and a safety net. This weak commitment to demobilization can also be a reflection of an overall insecure environment and fragile peace. Our results show that conflict is more likely to recur if both parties keep separate forces but also if the government does not reduce its military personnel. Interestingly, we do not find support that a substantial participation of both conflict actors in the national military improves the prospects of peace.

What becomes clear from our study is the necessity to more precisely study the characteristics and extent of demobilization processes. Most peace processes are now accompanied by Disarmament, Demobilization and Reintegration (DDR) programs. While the underlying idea is convincing and intuitive, there are hardly any empirical assessments of whether DDR programs are successful in securing a lasting peace. However, surveys among ex-combatants indicate that this transition is not always and for every participant very smooth but depends largely on the security and income situation. Micro-level surveys indicate that ex-combatants are more satisfied with the participation in DDR program if their income is rising due to the job training offered and if firearms are not widely available in society (Phayal, Khadka, and Thyne 2015) and reintegration might be more difficult for higher ranked and more educated ex-combatants (Humphreys and Weinstein 2007).

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Table 1. Determinants of Peace Survival I

	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)
GDP per capita (ln)	0.504* (0.196)	0.461* (0.185)	0.489* (0.200)	0.537 (0.212)	0.571 (0.229)
GDP per capita (ln)* ln(t)	1.034 (0.025)	1.046* (0.026)	1.035 (0.026)	1.031 (0.026)	1.020 (0.026)
Civil War Duration (ln)	0.913 (0.302)	0.765 (0.203)	0.912 (0.311)	0.893 (0.310)	0.781 (0.287)
Civil War Fatalities (ln)	1.296* (0.183)	1.190 (0.162)	1.316** (0.181)	1.263* (0.177)	1.304* (0.190)
Ethnic conflict	3.978 (3.539)	4.002 (3.892)	4.143* (3.548)	4.492 (4.889)	2.325 (1.957)
Peace agreement	0.192** (0.128)	0.129*** (0.095)	0.195** (0.130)	0.115** (0.101)	0.226* (0.172)
Victory	0.335 (0.236)	0.816 (0.811)	0.326 (0.233)	0.317 (0.250)	0.508 (0.338)
Continued fighting power		3.806* (2.655)			
Captured rebel leader			1.335 (1.016)		
Both in national military				2.285 (1.820)	
Separate forces					9.942** (10.321)
Observations	553	553	553	553	553
Subjects	48	48	48	48	48
Number of Failures	17	17	17	17	17
AIC	117.676	116.374	119.507	118.665	112.779
BIC	147.883	150.897	154.030	153.188	147.302
Log likelihood	-51.838	-50.187	-51.754	-51.332	-48.390

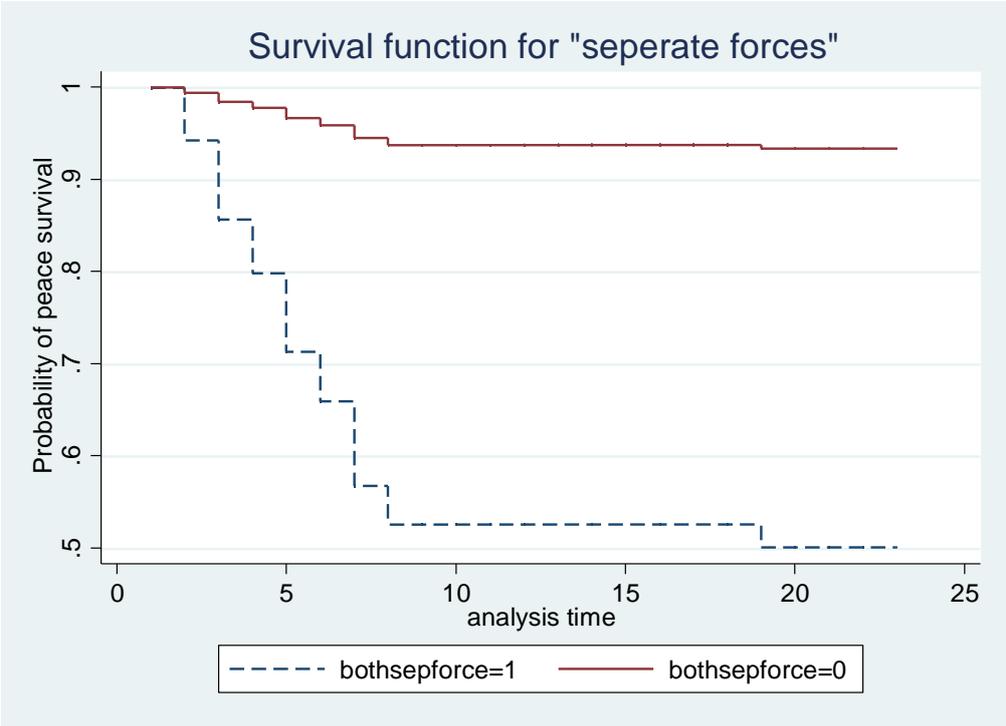
*Hazard ratios and robust standard errors in parentheses are reported, clustered on civil wars; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*

Table 2. Determinants of Peace Survival II

	(Model 1)	(Model 2)	(Model 3)
GDP per capita (ln)	1.152 (0.735)	0.532 (0.293)	0.530 (0.293)
GDP per capita (ln)* ln(t)	0.890 (0.098)	1.030 (0.035)	1.030 (0.035)
Civil War Duration (ln)	1.076 (0.451)	1.296 (0.440)	1.267 (0.429)
Civil War Fatalities (ln)	1.390** (0.198)	1.413*** (0.153)	1.413*** (0.151)
Ethnic conflict	2.730 (2.432)	2.545 (2.412)	2.458 (2.323)
Peace agreement	0.172* (0.166)	0.087*** (0.060)	0.083*** (0.058)
Victory	0.127*** (0.075)	0.100** (0.099)	0.107** (0.100)
Military expenditures growth	4.114*** (2.190)		
Military personnel growth		8.369*** (5.377)	9.434*** (6.397)
Military personnel * victory			0.075** (0.091)
Observations	447	503	503
Subjects	39	43	43
Number of Failures	9	14	14
AIC	62.448	90.562	92.398
BIC	95.269	124.327	130.383
Log likelihood	-23.224	-37.281	-37.199

*Hazard ratios and robust standard errors in parentheses are reported, clustered on civil wars; *p < 0.1, **p < 0.05, ***p < 0.01.*

Graph 1



Graph 2

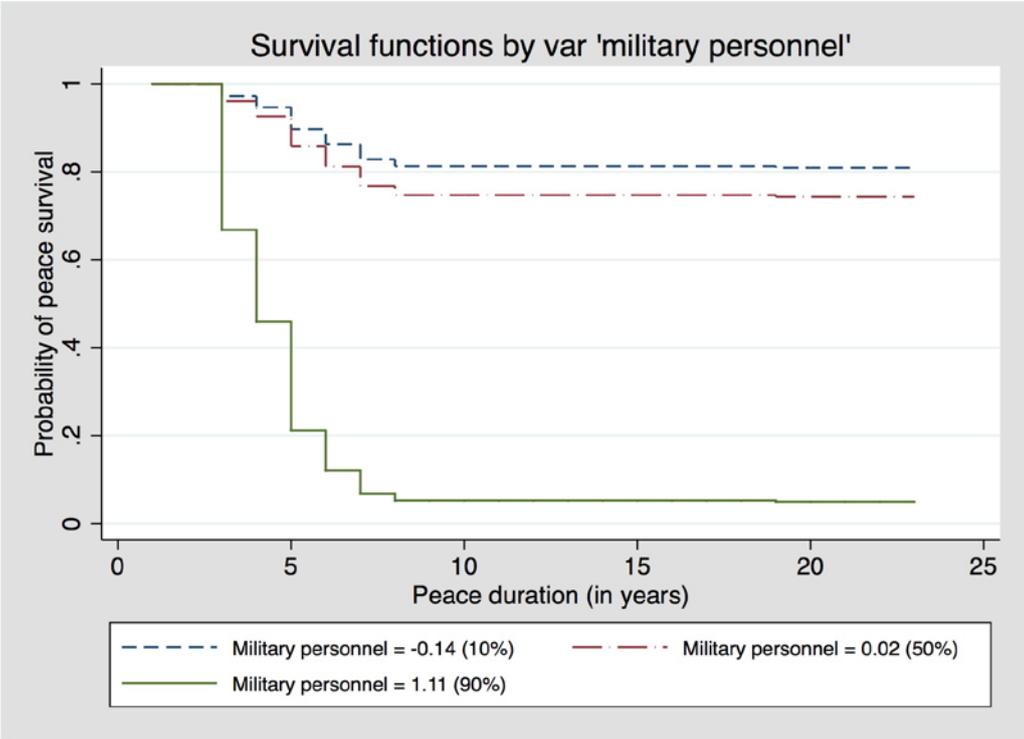


Table 3. Determinants of Peace Survival – Joshi et al. data

	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)	(Model 6)
Civil War Fatalities	1.000 (0.001)	1.000 (0.001)	1.000 (0.001)	1.000 (0.001)	1.000 (0.001)	1.000 (0.001)
Civil War Duration	1.003 (0.003)	1.003 (0.003)	1.001 (0.003)	1.002 (0.003)	1.001 (0.003)	1.002 (0.003)
Infant rate mortality	1.018 (0.011)	1.019 (0.012)	1.012 (0.010)	1.015 (0.010)	1.010 (0.010)	1.013 (0.010)
Conflict type	0.475 (0.431)	0.410 (0.365)	0.424 (0.355)	0.399 (0.321)	0.403 (0.328)	0.265 (0.209)
Polity 2	0.927 (0.057)	0.931 (0.059)	0.936 (0.061)	0.937 (0.060)	0.948 (0.057)	0.947 (0.070)
Disarmament provid.	0.512 (0.387)					
Demobilisation provid.		0.464 (0.420)				
Disarmament initiated			0.445 (0.295)			
Demobilisation initiated				0.553 (0.315)		
Disarmament implem.					0.400** (0.127)	
Demobilisation implem.						0.597 (0.170)
Observations	253	253	253	253	253	253
Subjects	30	30	30	30	30	30
Number of Failures	10	10	10	10	10	10
AIC	72.091	72.047	71.403	71.923	68.093	70.192
BIC	93.291	93.248	92.604	93.123	89.293	91.392
Log likelihood	-30.046	-30.024	-29.702	-29.961	-28.046	-29.096

*Hazard ratios and robust standard errors in parentheses are reported, clustered on civil wars; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*